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FORT MCMURRAY
FRINGE AREA PLANNING STUDY

March, 1986

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FORT MCMURRAY
FRINGE AREA PLANNING STUDY

March, 1986

Alberta
MUNICIPAL AFFAIRS

March 15, 1986

Improvement District 18 North
513 West Tower, Provincial Building
9915 Franklin Avenue
Fort McMurray, Alberta
T9H 2K4

Attention: Mr. Des Broadhurst, Manager

Dear Sir:

RE: **FORT MCMURRAY FRINGE AREA PLANNING STUDY**

We are pleased to submit the Fort McMurray Fringe Area Planning Study document.

The Planning Study was undertaken to review existing land use, resources and constraints in the vicinity of the City of Fort McMurray in Improvement District 18 North. The Study also makes a number of recommendations to consider when addressing land use and development issues in the area.

We wish to acknowledge the contributions of many people, including representatives of your office, Alberta Energy and Natural Resources, the City of Fort McMurray and Alberta Municipal Affairs Support Services, who assisted in the preparation of this document.

Trusting you will find the Study of assistance.

Yours truly,

Keith Vogl

Keith Vogl, Planning Officer
Lakeland Unit/Planning Branch

Table of Contents

Page

1. INTRODUCTION

1.1 Purpose 2
1.2 Study Context 2
1.3 Study Format 2
1.4 Study Area 2

2. LAND USE ACTIVITIES

2.1 City of Fort McMurray 6
2.2 Transportation Linkages 9
2.3 Residential Development 12
2.4 Industrial and Commercial Development 14
2.5 Institutional and Public Uses 16
2.6 Recreational Uses 18

3. NATURAL RESOURCES

3.1 Bituminous Oil Sands 22
3.2 Forestry 24
3.3 Trapping 26
3.4 Fish and Wildlife 26
3.5 Agriculture 28
3.6 Gravel Resources 30

4. ENVIRONMENTAL CONSTRAINTS

4.1 Soil Limitations 35
4.2 Topography 35
4.3 Flooding 35

5. SUMMARY 38

List of Illustrations

Page

Figure 1 Study Area 3
Figure 2 City of Fort McMurray Growth Areas 7
Figure 3 Existing Transportation Facilities 11
Figure 4 Existing Residential Subdivision and Private Lands 13
Figure 5 Existing Industrial and Commercial Development 15
Figure 6 Existing Institutional Uses 17
Figure 7 Existing Recreational Leases 19
Figure 8 Bituminous Oil Sands 23
Figure 9 Timber Dispositions 25
Figure 10 Fish and Wildlife Resources and Traplines 27
Figure 11 Agriculture 29
Figure 12 Gravel Resources 31
Figure 13 Environmental Constraints 37

1. INTRODUCTION

1.1 PURPOSE

This planning study was commissioned by Improvement District 18 (North) with the purpose of examining existing land use, resources and constraints in the vicinity of the City of Fort McMurray, and making recommendations which will assist the Improvement District to attain orderly and efficient land use and development in the area.

It was also the intent of the Improvement District, through the preparation of this study to provide a mechanism for discussion on development issues between the Improvement District, the City of Fort McMurray and Alberta Energy and Natural Resources.

1.2 STUDY CONTEXT

This Study was undertaken by Improvement District 18 (North) in response to increasing demands for residential, commercial and industrial development in the area outside the City of Fort McMurray in Improvment District 18.

Until recently, development has occurred either within the City of Fort McMurray, or in selected locations outside the City where a specific activity was not appropriate in the City. However, there has been increased pressure for development outside Fort McMurray as a result of:

- increased population in the area;
- the high cost of living in Fort McMurray;
- the desire for an alternative lifestyle;
- increased demand for industrial activities which are not appropriate/desirable in an urban environment

As a result, the Improvement District wished to take a more comprehensive look at land use in the area.

1.3 STUDY FORMAT

This Study is divided into three sections, addressing land use activities, natural resources and environmental constraints. Each of these sections includes a description of the existing situation, a discussion of why this is significant to the future planning of the area, and some recommended planning directions.

1.4 STUDY AREA

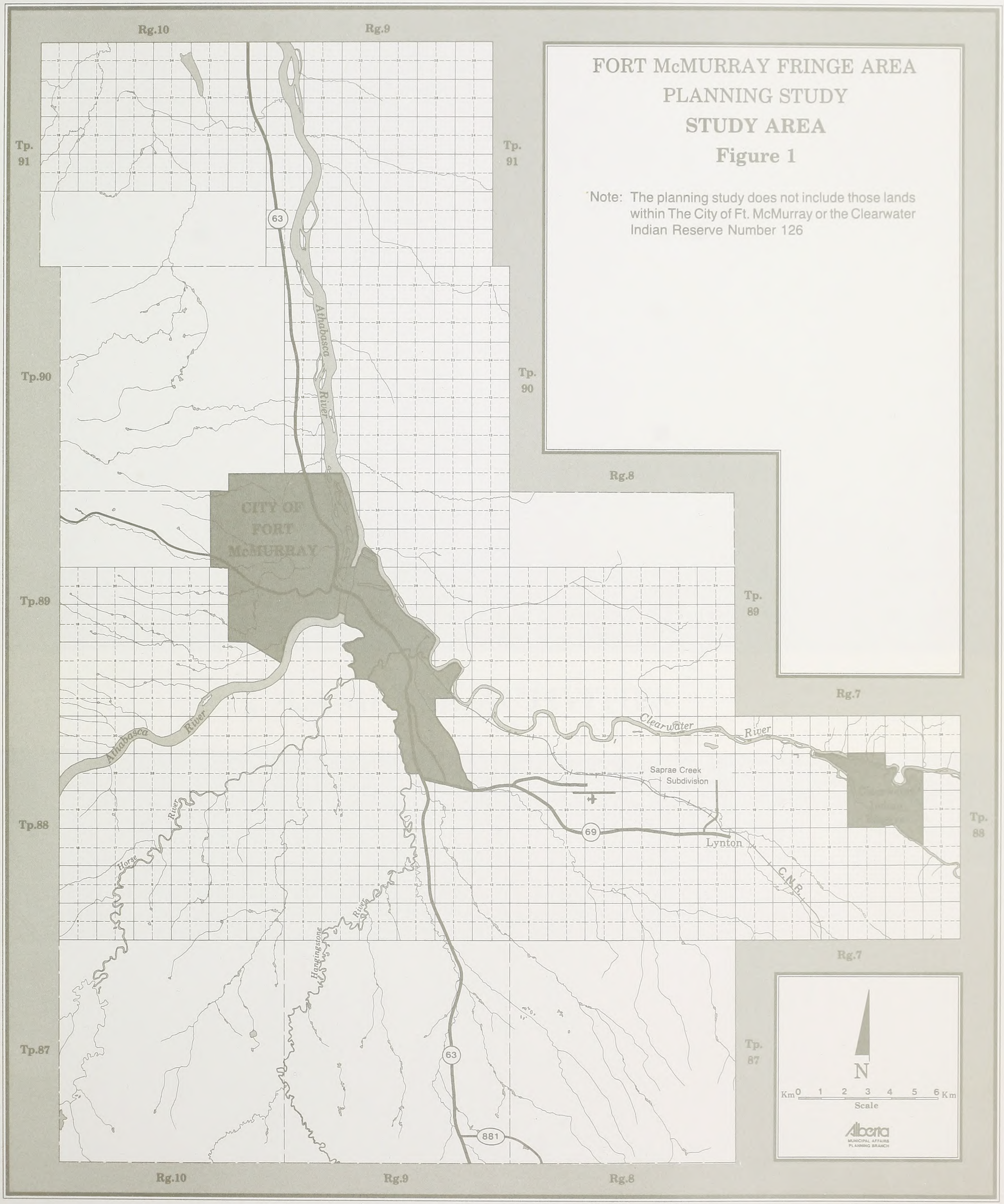
The Study area was chosen to encompass those areas immediately surrounding the City of Fort McMurray which have been subject to development pressures in recent years (see Figure 1). It extends north to the Suncor and Syncrude oil sands facilities; south to the Gregoire Lake turnoff (SR 881); east to the Clearwater Indian Reserve; and four miles west of the City limits to include all of Range 10-W4.

FORT McMURRAY FRINGE AREA PLANNING STUDY

STUDY AREA

Figure 1

Note: The planning study does not include those lands within The City of Ft. McMurray or the Clearwater Indian Reserve Number 126



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2. LAND USE ACTIVITIES

2.1 CITY OF FORT MCMURRAY

Background Information

One of the major planning considerations is the City of Fort McMurray, and the implications of future City growth on the surrounding area. At the present time, there are sufficient lands within the boundaries of Fort McMurray to expand from the existing population of 36,810 to approximately 60,000. However, in the long term, additional land will be needed.

The Fort McMurray General Municipal Plan (1980) identifies four areas outside the existing City boundaries for possible future urban development. These areas have been selected based on a number of economic and environmental factors which include: avoiding unstable river valley slopes and flood prone areas; minimizing costs and environmental impacts associated with river crossings; and avoiding poorly drained areas (muskeg). The four areas identified are as follows: (See figure 2).

1. Forest Heights:
   This is a large area on the east side of the Athabasca and Clearwater Rivers, where there is a significant amount of developable land. The high cost of extending services and establishing permanent physical access across the Clearwater River are the major constraints to growth in this area.

2. Harpe Heights:
   This area lies west of Highway 63 to the south of Fort McMurray. It is located between the valleys of the Hangingstone and Horse Rivers. The steep banks of these rivers also make access and servicing costly.

3. Southeast:
   This is a smaller area located southeast of Fort McMurray between the Clearwater River Valley and Saline Creek, north of Highway 69. Keyano College presently utilizes a portion of these lands as a heavy equipment training area.

4. MacKenzie Park South:
   This includes a small area of land located immediately east of Highway 63 and south of Highway 69 (Airport Road).

   It should be noted that the Fort McMurray General Municipal Plan is scheduled to be reviewed in 1986, which could result in changes to identified future growth areas. Based on servicing and transportation studies, it may also be economically feasible for future urban expansion to occur to the north of the City.

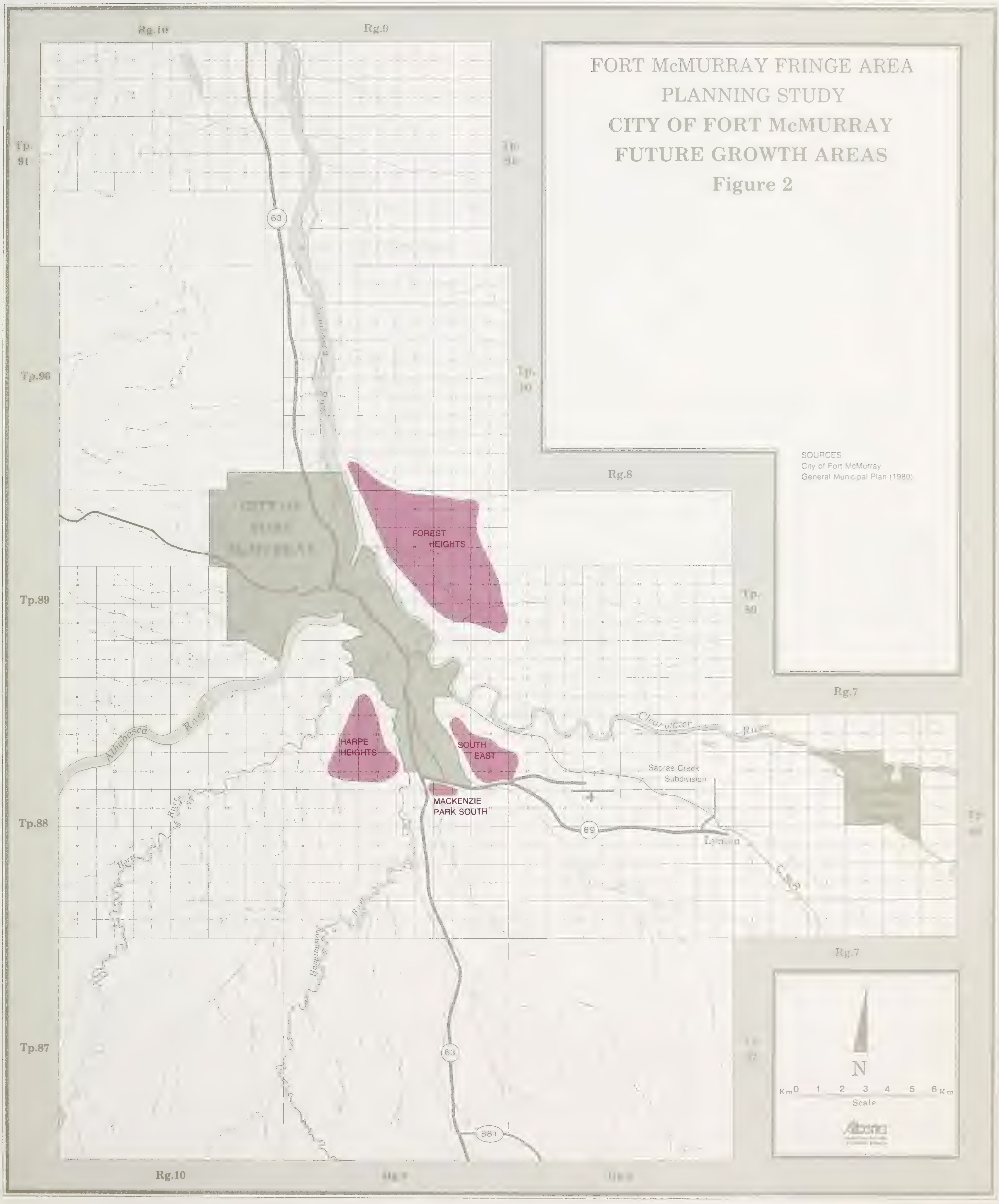
Implications

As the City of Fort McMurray is a major development component in the study area, land use should be carefully managed to ensure that future growth and development is not restricted by indiscriminant peripheral development. This is particularly important due to the severe development constraints around Fort McMurray, which limit the areas where the City can expand.

Recommendations

1. That the Improvement District adopt a policy of regulating development in the vicinity of the City of Fort McMurray to ensure that development is compatible with the future growth of the City.

2. That the Improvement District provide the City of Fort McMurray the opportunity to comment on development proposals which may have an impact on future urban growth, to minimize potential land use conflicts and encourage an orderly pattern of development.



2.2 TRANSPORTATION LINKAGES

Background Information

Roads

Roads in the Fort McMurray area are important, both as links within the region, as well as providing access to other parts of the province (see Figure 3).

The most significant roadway in the study area is Highway 63. It links Fort McMurray to the oil sands plants of Syncrude and Suncor located approximately 20 miles north of the City, as well as the Hamlet of Fort MacKay located further north. It also crosses the Athabasca River to possible future oil sands development near McLelland Lake. Highway 63 to the south provides Fort McMurray with the only road access to the balance of the provincial road network.

The other primary highway in the study area is Highway 69, which branches off Highway 63 at the south end of the City. This highway travels east approximately 8 miles to a rail-highway intermodel yard at Lynton. Local roads accessing onto Highway 69 include the access road to the Fort McMurray Airport, access to the Saprae Creek country residential subdivision and Spruce Valley ski hill, and an access road leading to the Waterways area of Fort McMurray.

Other roads include:

1. Secondary Road 868: only a small portion of this road is within the study area, where it intersects with Highway 63 approximately 9 miles south of Fort McMurray. It provides access to Gregoire Lake and the Hamlet of Anzac.
2. Thickwood Tower Forestry Road: this road travels west from Fort McMurray to the Thickwood Forestry Tower.
3. Other: There are also a number of trails and private roads to provide (sometimes seasonal) access for oil exploration and the timber industry.

Railways

The City of Fort McMurray is served by a single track rail line operated by Canadian National Railways which connects the City with Edmonton via Lac La Biche. The line was used in the past in conjunction with the MacKenzie - Athabasca barge system shipping goods to the north. However, the completion of the MacKenzie Highway and the Great Slave Lake railway reduced its importance. Today trains travel to Fort McMurray twice weekly, carrying freight to and from the Lynton yards. The major product transported is sulphur from the oil sands plants. The rail line also provides a passenger service, but information indicates that it caters mostly to local inhabitants travelling between Lac La Biche and Fort McMurray.

According to railway personnel, the importance of this line could increase in the future with an increased export of synthetic crude byproducts such as coke and sulphur.

Air

The Fort McMurray Airport is located approximately 3 miles southeast of the City of Fort McMurray. The airport, which has a paved runway of 6000 feet in length, is the most important airport in the region, providing regularly scheduled passenger service connections to Edmonton and Fort Chipewyan.

Transport Canada is presently updating its master plan for the Fort McMurray airport, to enable it to keep pace with future demands. In addition, the Improvement District has recently undertaken a Airport Vicinity Protection Area planning program, to ensure future land use and development around the airport is compatible with the safe and efficient operation of the airport.

Implications

Development is generally restricted to those areas which have road access. This focuses development on a very limited number of existing roadways. Unless regulated this could result in strip development, causing safety problems, and may restrict access to lands behind the development strip.

The railway has had relatively little impact on activities in the study area, with the only activity using the railway being the sulphur loading at Lynton. However, the rail line could be an important location factor for industries in the future.

The Fort McMurray Airport is an important resource to the entire region. In order to maximize safety and ensure that the future use of the airport is not restricted, development proposals in the area should be regulated.

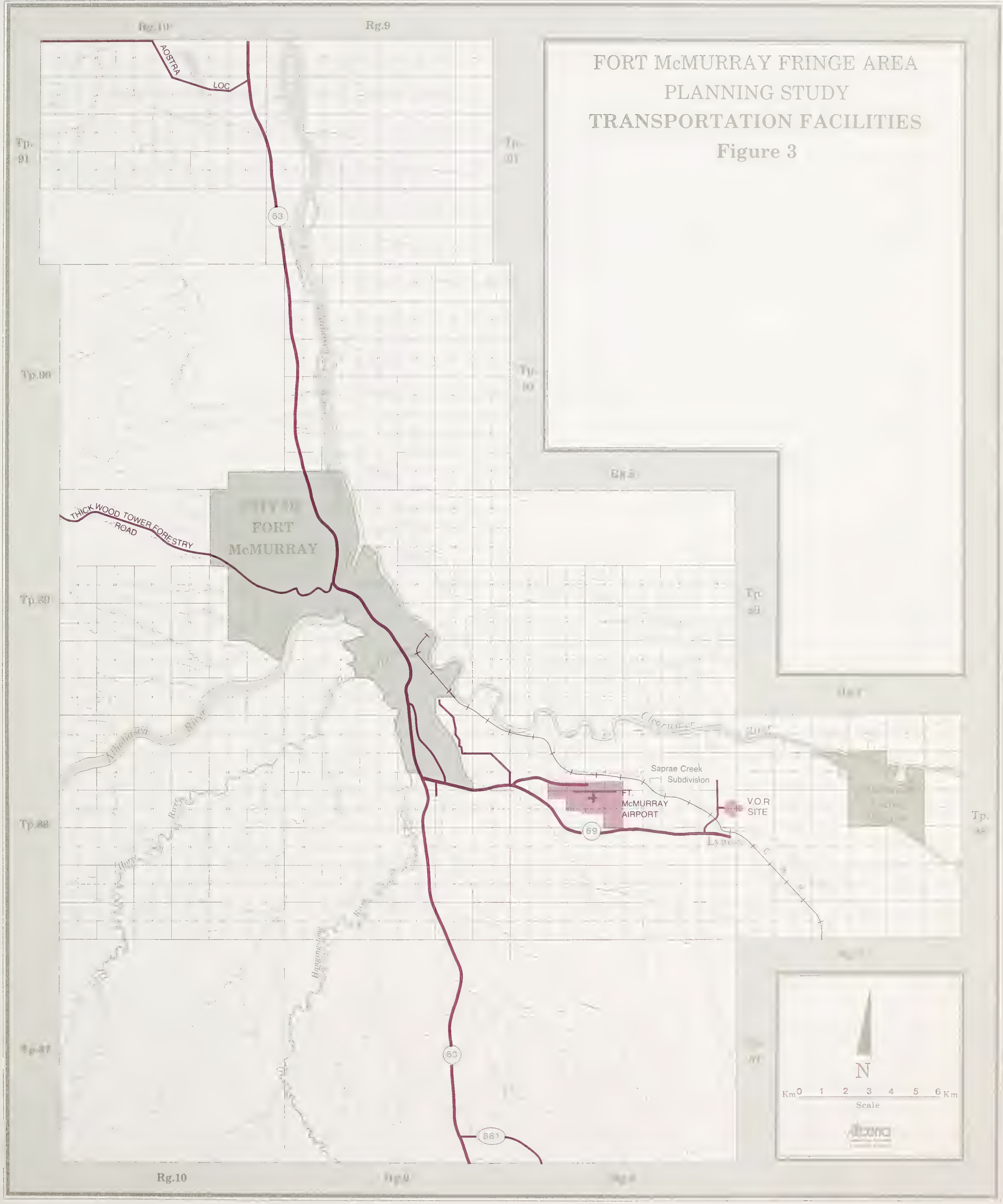
Recommendations

1. The Improvement District shall:
    - (a) encourage Alberta Transportation to maintain Highway 63 and 69 as major arterial rodways, including regulating access to ensure the functional integrity of these highways are maintained.
    - (b) oppose any subdivision or development of land which may disrupt the safe operation of any road.
    - (c) encourage roads to be designed in a fashion which minimizes maintenance and snow removal costs, and is compatible with future urban growth.

FORT McMURRAY FRINGE AREA PLANNING STUDY

TRANSPORTATION FACILITIES

Figure 3



2.3 RESIDENTIAL DEVELOPMENT

Background Information

There has been very little residential development in the study area. This can largely be attributed to two factors. Firstly, there is very little privately owned land (see figure 4). Secondly the area is within the ‘‘Green Area’’ of the province. It is the policy of the Alberta Government to manage public lands in the Green Area for forest production, water conservation, recreation, fish and wildlife protection, grazing and industrial development. Residential development is not an endorsed activity in the Green Area.

Notwithstanding the above, in 1982 the Public Lands Division of Alberta Energy and Natural Resources made lands available east of Fort McMurray for country residential development at Saprae Creek. In 1984 a subdivision was approved which resulted in the creation of 201 country residential lots varying in size from one to five acres. The parcels are to be serviced by individual septic systems and water piped from the City of Fort McMurray.

Implications

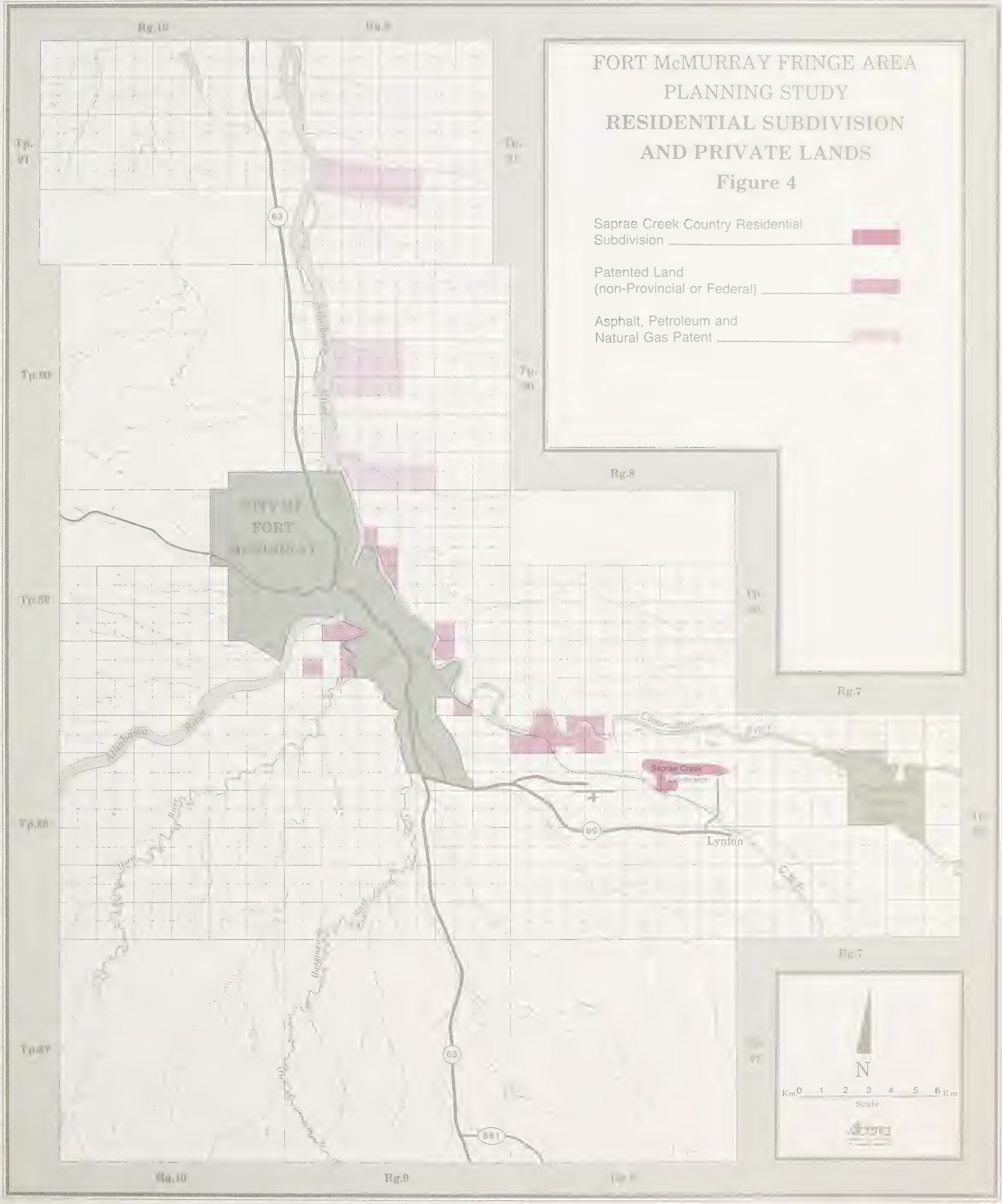
One of the major consequences of the Alberta Government Green Area Policy in the Fort McMurray area is that there is very little privately owned residential land or residential development outside the boundaries of the City of Fort McMurray. This has kept municipal servicing costs relatively low. However, with the approval of the Saprae Creek country residential subdivision, and the possibility of additional country residential development in the future, residential development should be undertaken in an orderly and economic manner from a municipal perspective.

Recommendations

1. The Improvement District should not support scattered residential development in the study area, due to the high costs of providing municipal services (ie. school bussing, fire protection, road maintenance).

2. The Improvement District may wish to consider permitting clustered country residential development which meets the following criteria:
   (a) will not inhibit urban growth;
   (b) is compatible with adjacent land use;
   (c) has site characteristics which are suitable for residential development, (including adequate soil conditions for residential construction and sewage disposal);
   (d) has an adequate supply of potable water;
   (e) will not place a financial burden on the Improvement District;
   (f) will not cause significant environmental degradation (erosion, pollution).

3. The Improvement District should not issue a development permit for residential purposes prior to receiving evidence from the Plumbing Inspection Branch, Alberta Labour, indicating that the type of proposed sewage disposal system has been approved.



FORT McMURRAY FRINGE AREA PLANNING STUDY

RESIDENTIAL SUBDIVISION AND PRIVATE LANDS

Figure 4

2.4 INDUSTRIAL AND COMMERCIAL DEVELOPMENT

Background

The major industrial activities in the Fort McMurray region are the oil sands plants (Syncrude and Suncor) north of the study area. Within the study area itself there are a number of industrial developments, which can be divided into two components for discussion purposes: resource industries, and secondary industries.

Resource Industries

Resource industries include those activities directly related to the extraction and/or processing of natural resources. These industries include:

1. Forest Products:
   Two sawmills are located within the study area. A small scale sawmill operated by a local entrepreneur is located approximately four miles south of Fort McMurray. A larger sawmill north of Fort McMurray is operated by Northlands Forest Products.
2. Bituminous oil sands:
   Texaco Canada Resources Ltd. operates an experimental in-situ project southeast of Fort McMurray.
3. Gravel:
   Gravel pits are operated immediately east of the City, and north at Poplar Creek.
4. Peat:
   Peat is extracted at a site approximately 1.5 miles south of Fort McMurray.
5. Topsoil:
   A new business was recently initiated 1.5 miles north of the City to manufacture topsoil through the extraction and mixing of peat, sand and topsoil.

Secondary Industries

Secondary industries are those industrial activities which are not directly involved in the extraction or processing of natural resources. Such uses include warehousing, storage, manufacturing and equipment repair.

Very few secondary industries have established within the Improvement District around Fort McMurray due to the lack of municipal sewer and water services. The majority of secondary industries in the study area have established within the industrial park located east of the Fort McMurray Airport. This industrial park is operated by Alberta Mortgage and Housing Corporation, who allocate parcel of approximately 1 acre on a lease basis. The park has power service available, but does not have water services, sewer services or telephone facilities. Industries locating in the park are generally related to dry storage or repair facilities which do not require a higher level of servicing.

Other secondary industrial uses include a towing and storage business, and an auto wrecker approximately 1 mile north of Fort McMurray. An asphalt plant is located approximately 9 miles north of the City. There is a rail-highway intermodel yard located at Lynton, southeast of Fort McMurray, which was established to facilitate freight loading for Canadian National Railways. This is also the site of a sulphur processing plant, which is the major user of the intermodel yard.

It should be noted that there have been recent applications for industrial storage, assembly and salvage yards along highway 63 north of Fort McMurray.

Commercial Development

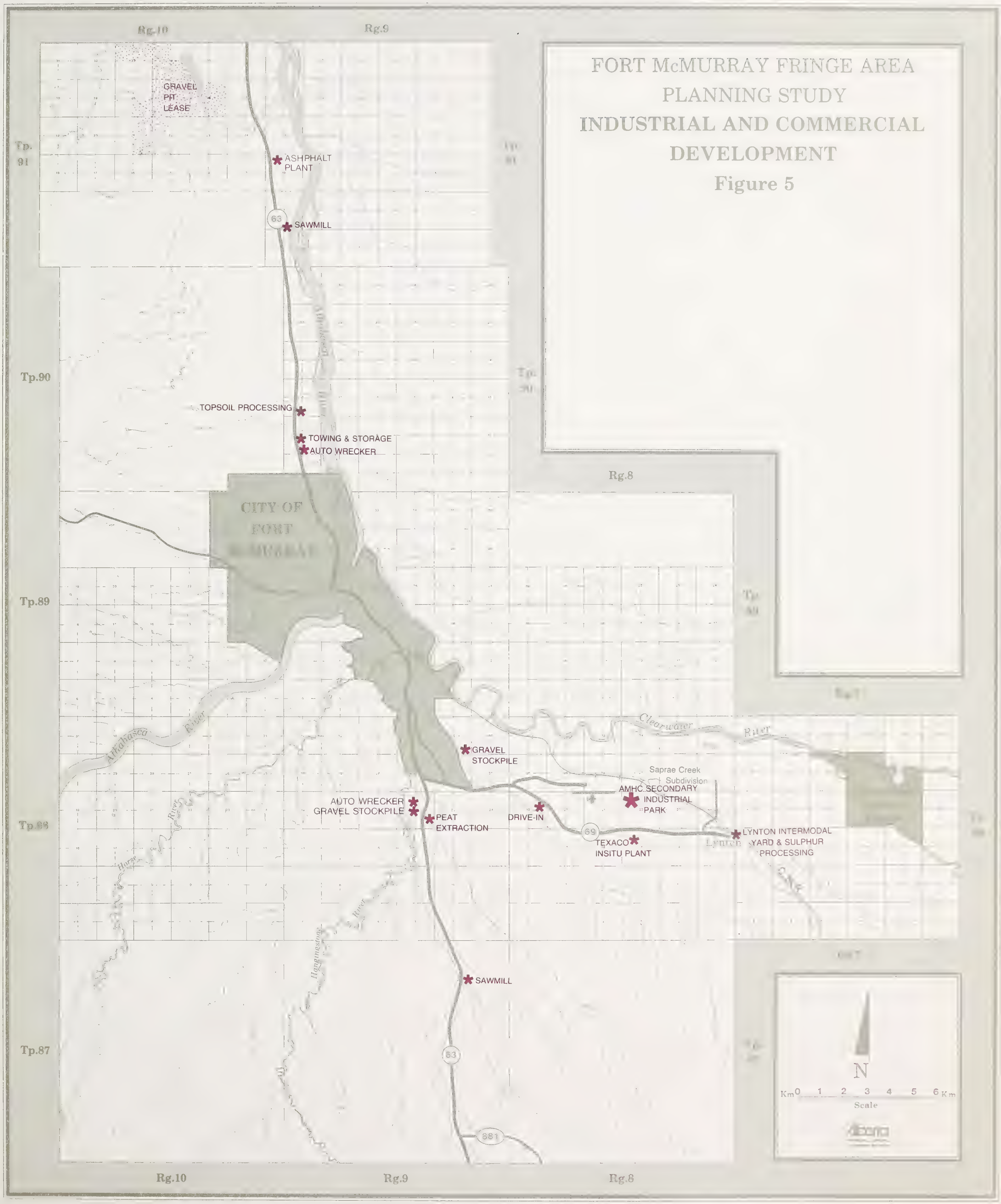
There is only one commercial development within the study area, because such activities have generally located in the City of Fort McMurray. The exception is a drive-in theatre located on highway 69 southeast of the City, which has located in the Improvement District to satisfy its need for a larger parcel of land.

There have also been a number of proposals in recent years for highway commercial development on highway 63 both north and south of the City. This would add to the amount of commercial development in the Improvement District.

Implications

Two types of industries have located in the study area; resource industries, and secondary industries. Resource industries are located on a site to take advantage of a specific resource (gravel extraction, oil extraction) or are situated to minimize impacts on other uses (sawmill). Secondary industries and commercial activities locating in the Improvement District have done so to take advantage of larger areas of affordable land, and do not require an urban level of municipal services.

These uses have generally been accepted as appropriate in the fringe area around Fort McMurray. However, as additional activities indicate a preference to locate in the Improvement District, there is an increased possibility that municipal services will be requested. There is also an increased risk of conflict with the City of Fort McMurray, who may feel that their tax base is negatively affected by industries locating outside the City boundaries.



FORT McMURRAY FRINGE AREA
PLANNING STUDY
INDUSTRIAL AND COMMERCIAL
DEVELOPMENT
Figure 5

Recommendations

1. It is recommended that the Improvement District develop policies to accommodate industrial development which are appropriate in the rural area. Appropriate rural industrial uses may include the following types of activities:
   (a) Resource extractive and related processing industries. These uses are often dependent upon the location of the resource for a site, or may not be suitable to the urban environment due to operating characteristics of the industry. Examples include sawmills, oil sands processing facilities, and gravel extraction and processing operations.
   (b) Secondary industries requiring large areas of land, but having only minimal requirements for on-site improve- ments. This includes such activities as outdoor storage and handling of equipment, bulk materials, and servicing and repair operations incidental to the dominant use.

2. Industries permitted in the study area should be encouraged to locate in a concentrated fashion to minimize conflicts with adjacent land uses, facilitate the economic provision of roads, and reduce the number of access points required onto major roadways.

3. Industries should be permitted in isolated locations only where:
   (a) it is a natural resource extractive industry whose location is determined by the resource; or
   (b) it is an industry which is suited to an isolated site due to the nature of the activity (ie. hazardous, noisy noxious, etc.).

4. Industrial activities should only be permitted to locate in areas which:
   (a) have stable, well drained soils;
   (b) have (or will have) safe access;
   (c) is compatible with adjacent land use;
   (d) the proposal will not result in environmental degradation (erosion, pollution).

5. The Improvement District should promote the establishment of a rural industrial park to accommodate appropriate rural industrial uses in the Fort McMurray urban fringe area.

6. Commercial development is generally more appropriately located within an urban centre, to take advantage of municipal services and the urban market. However, there may be instances where commercial activities may be appropriately located in the rural area. An example is the Drive-In Theatre east of Fort McMurray on Highway 69. The Improvement District should consider restricting commercial activities in the Fort McMurray fringe area to those uses which cannot be suitably accommodated within the City.

2.5 INSTITUTIONAL AND PUBLIC USES

Background Information

A number of institutional land uses have established in the Improvement District near Fort McMurray, the majority of which have located southeast of the City along Highway 69. In addition to the Fort McMurray Airport, there is the Keyano College heavy equipment training area, a minimum security camp operated by the Alberta Solicitor General's Department, and a fire fighter holding area used by the Alberta Forest Service.

The City of Fort McMurray sanitary landfill site is immediately south of the City boundry, between highway 63 and the Hangingstone River. The S.P.C.A. also operates from this area.

The Alberta Forest Service is undertaking environmental research at a 260 acre Forest Improvement Area further south of the City.
(See figure 6.)

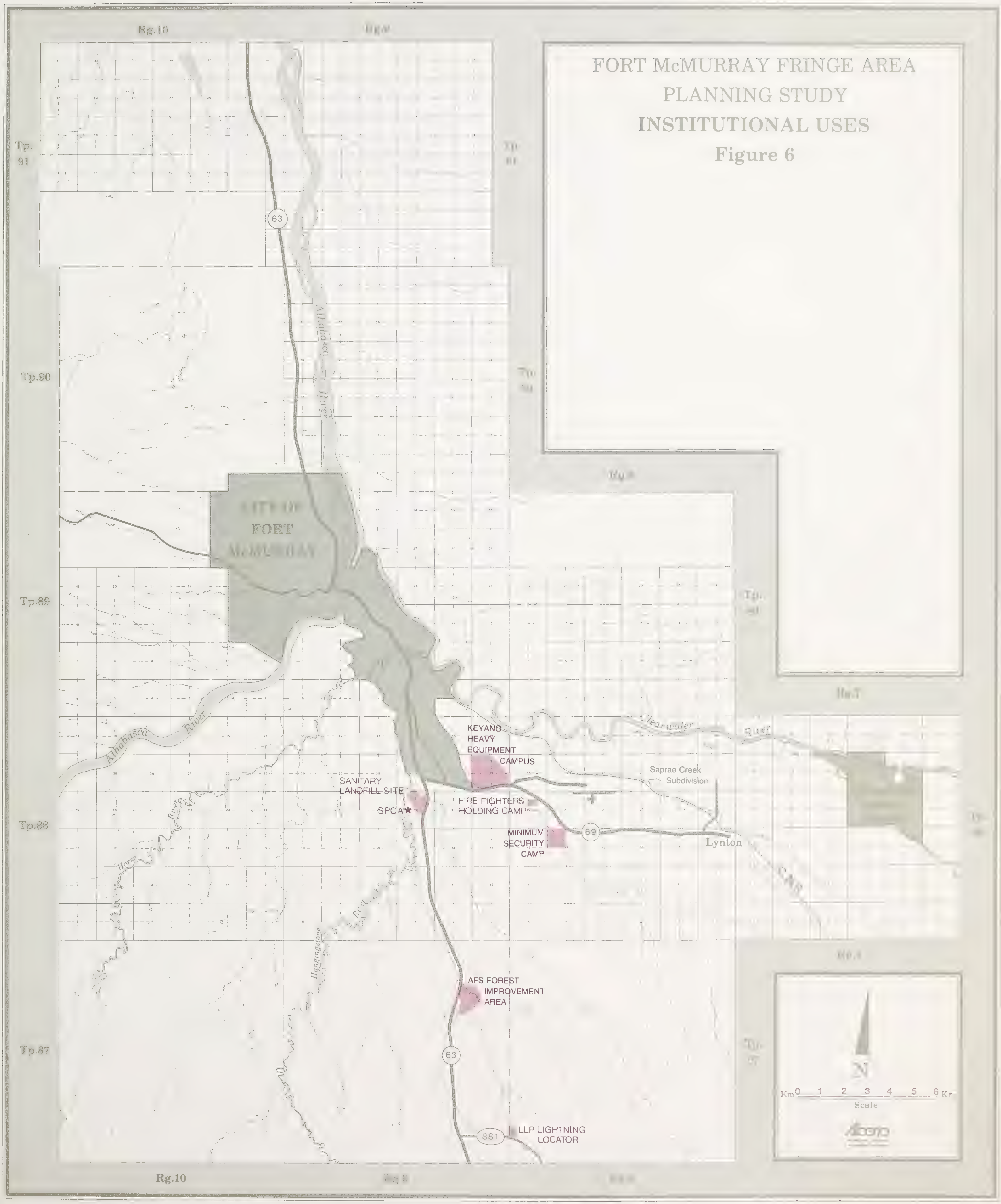
Implications

Institutional activities which have established in the Improvement District to date have all been uses which have special site requirements, usually large areas of land or an isolated location, which cannot be accommodated in an urban environment. In addition, they are special types of activities which are very difficult to anticipate, have a variety of site requirements, and therefore are difficult to plan for.

Recommendations

1. The Improvement District should continue to be receptive to institutional land use proposals having unique site requirements conducive to a rural site. As such uses should be judged on the particular site requirements of each proposal.

FORT McMURRAY FRINGE AREA PLANNING STUDY
INSTITUTIONAL USES
Figure 6



2.6 RECREATIONAL ACTIVITIES

Background Information

The study area accommodates a number of active and passive recreational activities serving Fort McMurray residents. The scenic qualities of the river valleys provide opportunities for hiking, cross country skiing, snowmobiling as well as canoeing, boating and fishing.

The Spruce Valley Ski Hill was recently opened on the Clearwater River valley east of the City, providing excellent downhill skiing complete with two chairlifts and snowmaking equipment.

Horseback riding is accommodated within the study area by the Clearwater Rodeo and Light Horse Coop stables south of Fort McMurray; stables to the west of the City; and a hay ride/sleigh ride business to the east of the City on the Airport Road.

Other recreational land uses include a motor sport facility north of Fort McMurray, a rifle range and a motorcycle dirt race track and bicycle track south of the City. (see Figure 7)

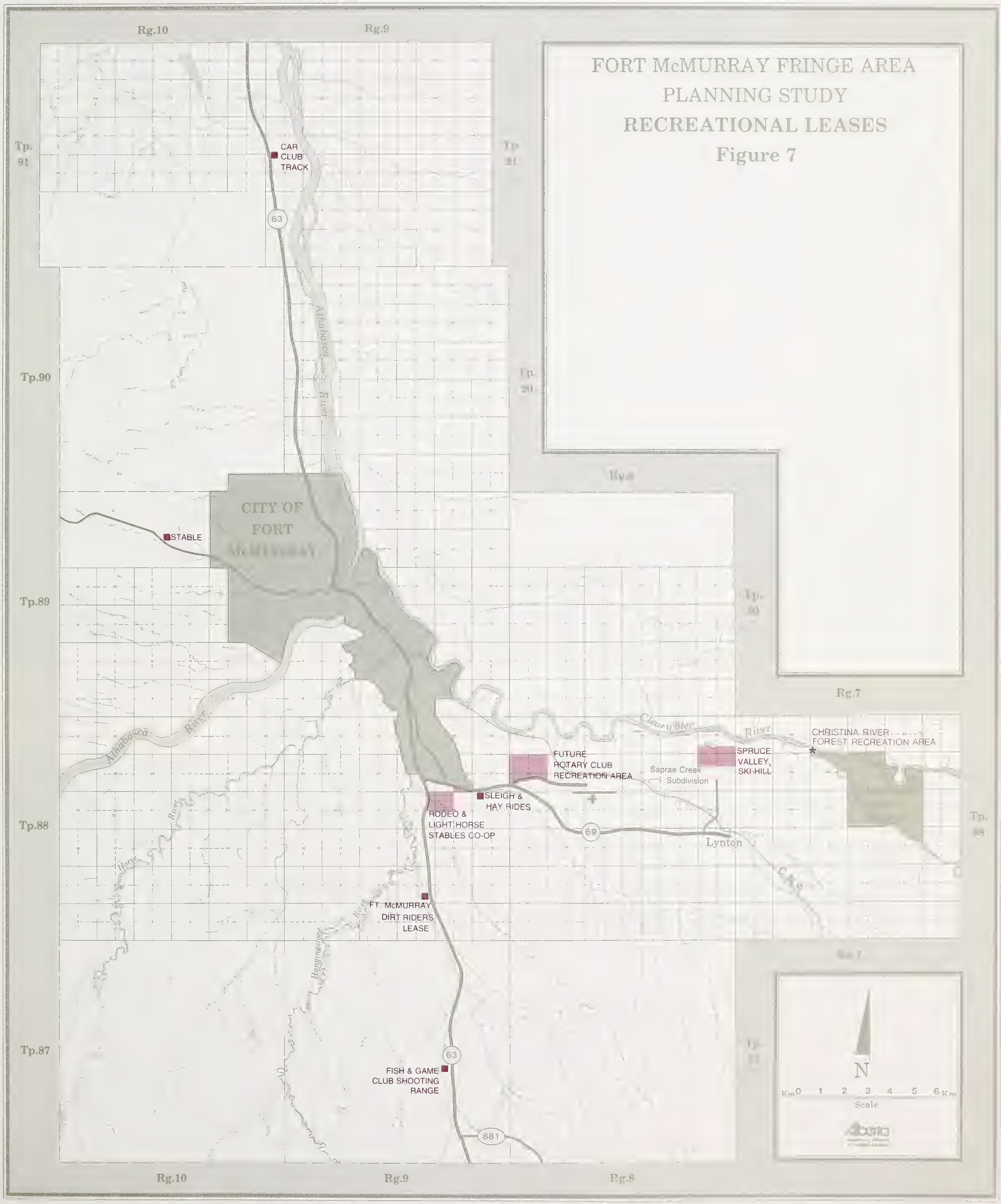
In addition, the Fort McMurray Rotary Club has obtained a lease for approximately 400 acres of crown land to develop a recreation area on the Airport Road.

Implications

The Improvement District serves a valuable role as a recreation area for Fort McMurray residents and visitors to the area. It is therefore important that the natural features such as the river valleys are not developed in a way which will negatively affect the future recreatonal use and enjoyment of these amenities.

Recommendations

1. The aesthetic amenities of the river valleys around Fort McMurray provide a very attractive setting. The Improvement District should endeavour to protect the natural beauty of this area by ensuring that development takes into consideration the recreational attributes of the valleys.
2. The Improvement District should consider undertaking a study of river valley lands in the Fort McMurray area, to establish areas of environmental sensitivity and recreational importance on a more site specific basis.
3. The Improvement District in conjunction with Alberta Energy and Natural Resorces should examine off road vehicle use in the study area to determine whether special controls are needed to protect the environment.
4. Recreational activities which require a rural setting due to special site requirements should only be permitted by the Improvement District where:
   - (a) Such activities do not result in significant environmental degradation;
   - (b) The proposed use is compatible with the site and adjacent land uses;
   - (c) Adequate services are to be available to serve the proposal. This includes provision of water, sewage dispsosal, access, parking, etc.



FORT McMURRAY FRINGE AREA PLANNING STUDY

RECREATIONAL LEASES

Figure 7

3. NATURAL RESOURCES

3.1 BITUMINOUS OIL SANDS

Background Information

Bituminous oil sands leases cover almost the entire study area (figure 8). These leases are issued for 25 year periods, and allow the lease holder to undertake exploratory drilling programs and, subject to Provincial Cabinet approval, mine, extract and process the oil sands. At the present time the only oil sand development in he study area is a pilot in-situ project southeast of Fort McMurray by Texaco Canada Resources Ltd.

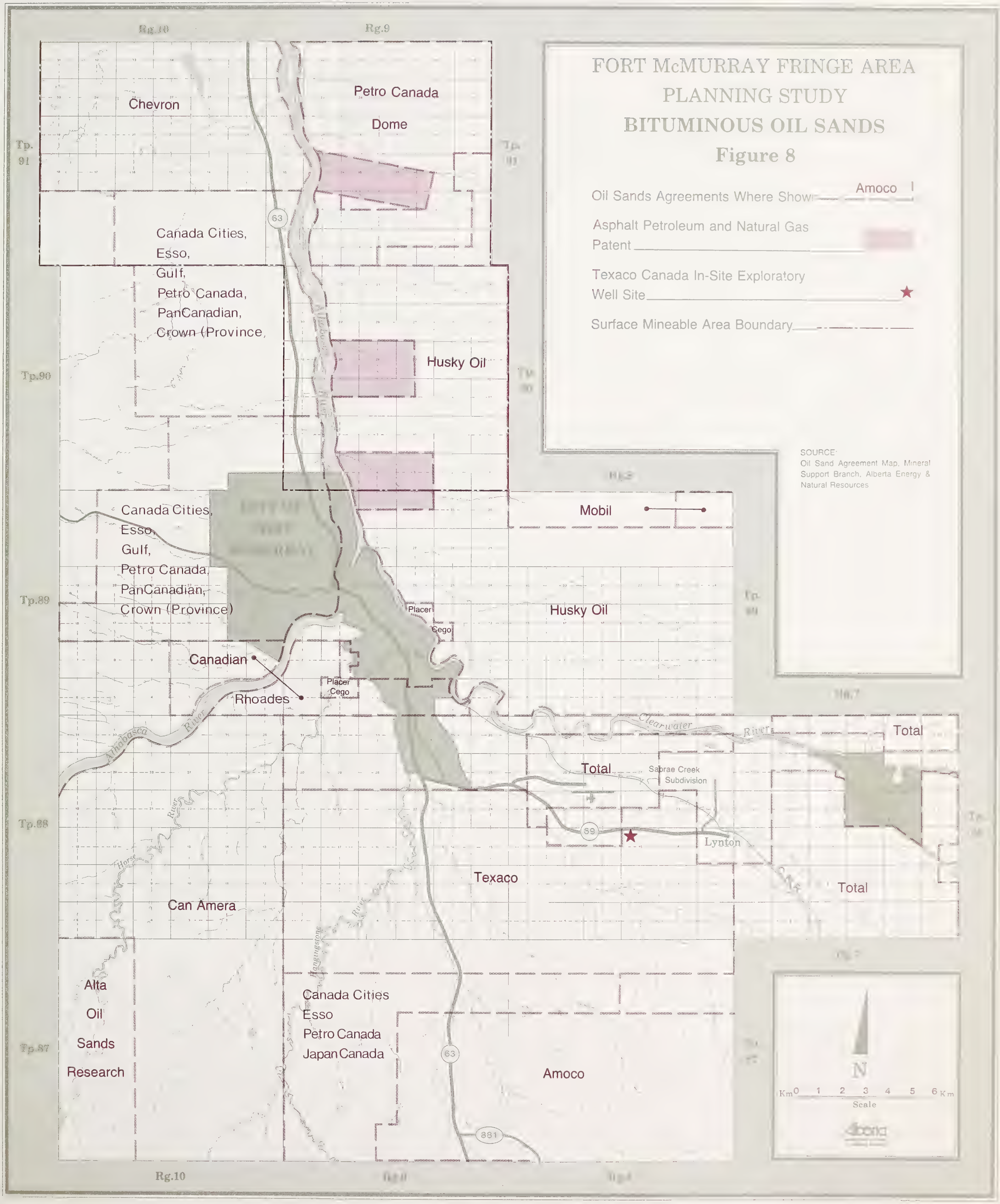
Figure 8 also illustrates the area identified by the Energy Resources Conservation Board as a ‘‘surface minable area.’’ This area, which is largely north of the City of Fort McMurray, is generally where bituminous oil sands deposits are found at a depth which could potentially be extracted through surface mining methods such as those used at Syncrude and Suncor. In other areas this overburden is of a depth such that other methods of extraction would probably be necessary.

Implications

Bituminous oil sands developments are not anticipated in the study area at the present time. However, changes in technology or petroleum prices could make the extraction of oil sands in the area commercially attractive in the future. It is therefore important for the Improvement District to be aware of the potential of the area, and be prepared to address oil sands developments should they occur.

Recommendations

1. The Improvement District should encourage oil sands developments to occur in a manner which are compatible with adjacent land uses and resources, and minimize impacts on the natural environment.
2. The Improvement District should encourage developments to located where they would not have a detrimental impact on existing, or known future oil sands.



Oil Sands Agreements Where Shown
Amoco
Asphalt Petroleum and Natural Gas Patent
Texaco Canada In-Site Exploratory Well Site
★
Surface Mineable Area Boundary
Rg.10
Rg.9
Rg.8
Rg.7
Tp. 91
Tp.90
Tp.89
Tp.88
Tp.87
Chevron
Petro Canada
Dome
Canada Cities, Esso, Gulf, Petro Canada, PanCanadian, Crown (Province
Husky Oil
Canada Cities, Esso, Gulf, Petro Canada, PanCanadian, Crown (Province)
Mobil
Placer
Cego
Canadian
Rhoades
Placer Cego
Athabasca River
Clearwater River
Horse River
Hangingstone River
Total
Sabrae Creek Subdivision
Lynton
Texaco
Can Amera
Alta Oil Sands Research
Canada Cities Esso Petro Canada Japan Canada
Amoco
63
69
881
N
Km 0 1 2 3 4 5 6 Km
Scale
Alberta

FORT McMURRAY FRINGE AREA PLANNING STUDY
BITUMINOUS OIL SANDS
Figure 8

SOURCE: Oil Sand Agreement Map, Mineral Support Branch, Alberta Energy & Natural Resources

3.2 FORESTRY

Background Information

This area is characterized as a mixed wood forest, with stands of aspen, poplar, birch, spruce and fir. Aspen is the most common species on well drained lands, while jackpine grows in sandy soils, and black spruce in wet areas.

There is a significant forest industry operating within the study area. Pelican Spruce Mills Ltd. is the major operator, holding a number of timber licences (see figure 9). Pelican Spruce Mills have a sawmill approximately 20 miles south of the City of Fort McMurray.

Northlands Forest Products operates a sawmill approximately seven miles north of Fort McMurray, cutting logs harvested north of the study area.

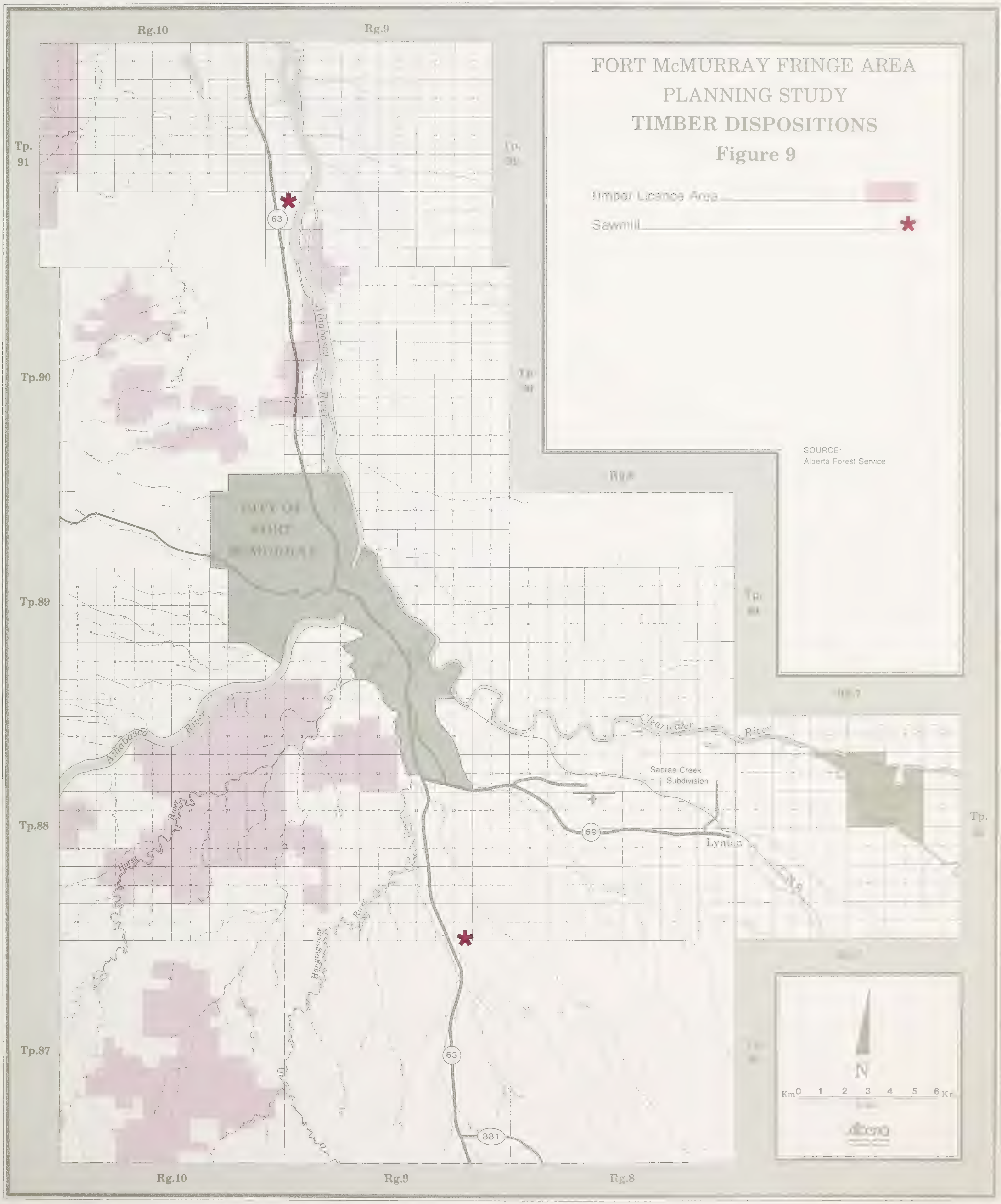
There is also a small scale locally operated sawmill approximately four miles south of the City.

Implications

Timber is a valuable renewable resource in the region. However, the harvesting and processing of the timber can have a significant impact on land uses in the area. Similarly, incompatible land uses can have a detrimental effect on forestry operations.

Recommendations

1. The Improvement District should support the activities of the Alberta Forest Service in the management of this resource in a manner which provides for the utilization of the resource while minimizing negative environmental impacts.



FORT McMURRAY FRINGE AREA PLANNING STUDY

TIMBER DISPOSITIONS

Figure 9

Timber Licence Area ▨

Sawmill *

SOURCE:
Alberta Forest Service

3.3 TRAPPING

Background Information

There are 12 traplines which are either entirely or partially located within the study area, providing income to 29 individuals (see figure 10). Trappers report taking Beaver, Lynx, Muskrat, Fisher, Coyote, Weasel, Squirrel, Mink, Otter, Wolf and Fox.

A total of 855 furs were taken in the 1984-85 season, on these traplines, down from the 1462 reported for the 1983-84 season.

Implications

Trapping is an economic activity in the study area which could be negatively affected by increased development.

Recommendations

1. The Improvement District should encourage measures be taken to minimize the impact of new developments on traplines.

3.4 FISH AND WILDLIFE

Background Information

Fisheries

The Athabasca and Clearwater Rivers and their tributaries support a variety of sportfish, including Arctic Grayling, Walleye, Northern Pike, Lake White fish and Goldeye populations (see figure 10). These fish provide a sport fishery and serve as a local food source.

Ungulates

The number of moose in the overall study area is generally low. However, surveys of the river valleys indicate moose at much higher densities. A survey of the Athabasca River valley southwest of Fort McMurray undertaken in 1982 revealed an average of .73 moose per linear mile. The Clearwater River Valley had an average of .83 moose per linear mile.

Moose densities within the Athabasca River Valley north of Fort McMurray have not been determined, however, average moose densities are estimated at .42 to .52 per sq mile in this general area.

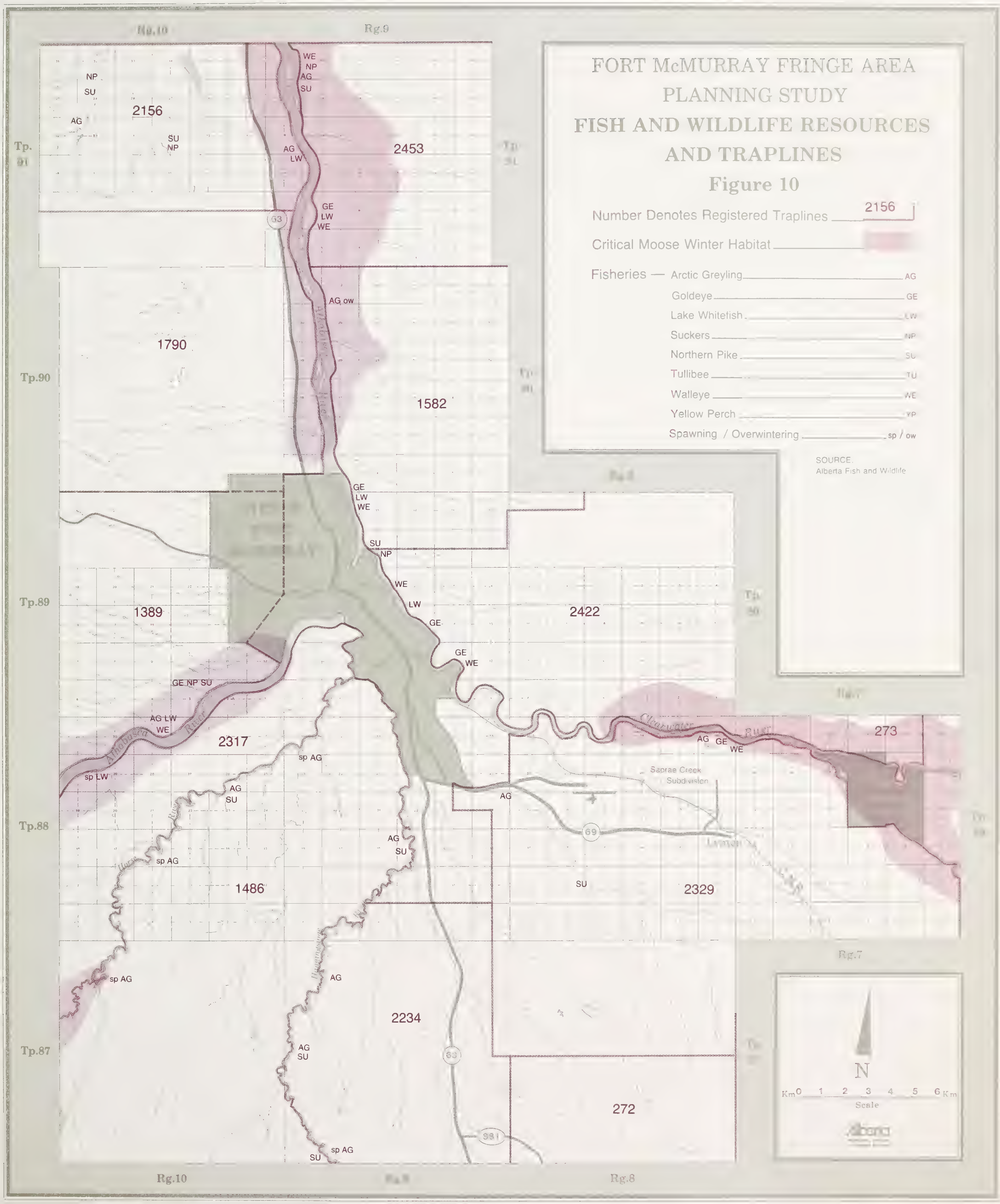
White tail deer are found throughout the planning area.

Implications

The importance of fish and wildlife in the area as an economic resource is largely as it relates to tourism and recreation through hunting and fishing. More importantly, fish and wildlife resources add to the general attractiveness of the Fort McMurray area to residents, who take pride in the natural flavour of the area.

Recommendations

1. The Improvement District should take fish and wildlife habitat into consideration when evaluating development proposals. This should include:
   (a) retaining natural vegetation in river valleys to provide wildlife habitat and help protect watercourses from erosion and runoff.
   (b) restricting developments which will result in sewage entering fishbearing waters.



FORT McMURRAY FRINGE AREA PLANNING STUDY

FISH AND WILDLIFE RESOURCES AND TRAPLINES

Figure 10

SOURCE:
Alberta Fish and Wildlife

3.5 AGRICULTURE

Background Information

Agriculture has not developed as an major economic activity in the Fort McMurray area due to soil and climate limitations. The most productive lands are confined to the valley floors of the Clearwater and Athabasca Rivers (see figure 11). These are lands which, according to general soil studies have low to fair productivity for a range of crops but may have high productivity for a specially adapted crop.

Most of the area having class 4 rated soils is treed, although an area east of Fort McMurray is presently being used for market gardening. Because of the limited land and relatively short growing season, market gardening may represent the best use of the Class 4 soils of the area.

In addition to the above, other agricultural pursuits include a fur farm located near the Anzac road turnoff, and some horse grazing associated with recreational horse use.

Implications

The better agricultural lands in the Fort McMurray area are found within river valleys. These areas are also areas of flood potential and high recreational value.

Very little land is suitable for crop production in the Fort McMurray area. As such, it may be desirable to restrict development in these areas which could otherwise be established on lower capability agricultural soils, in order to maximize the resource.

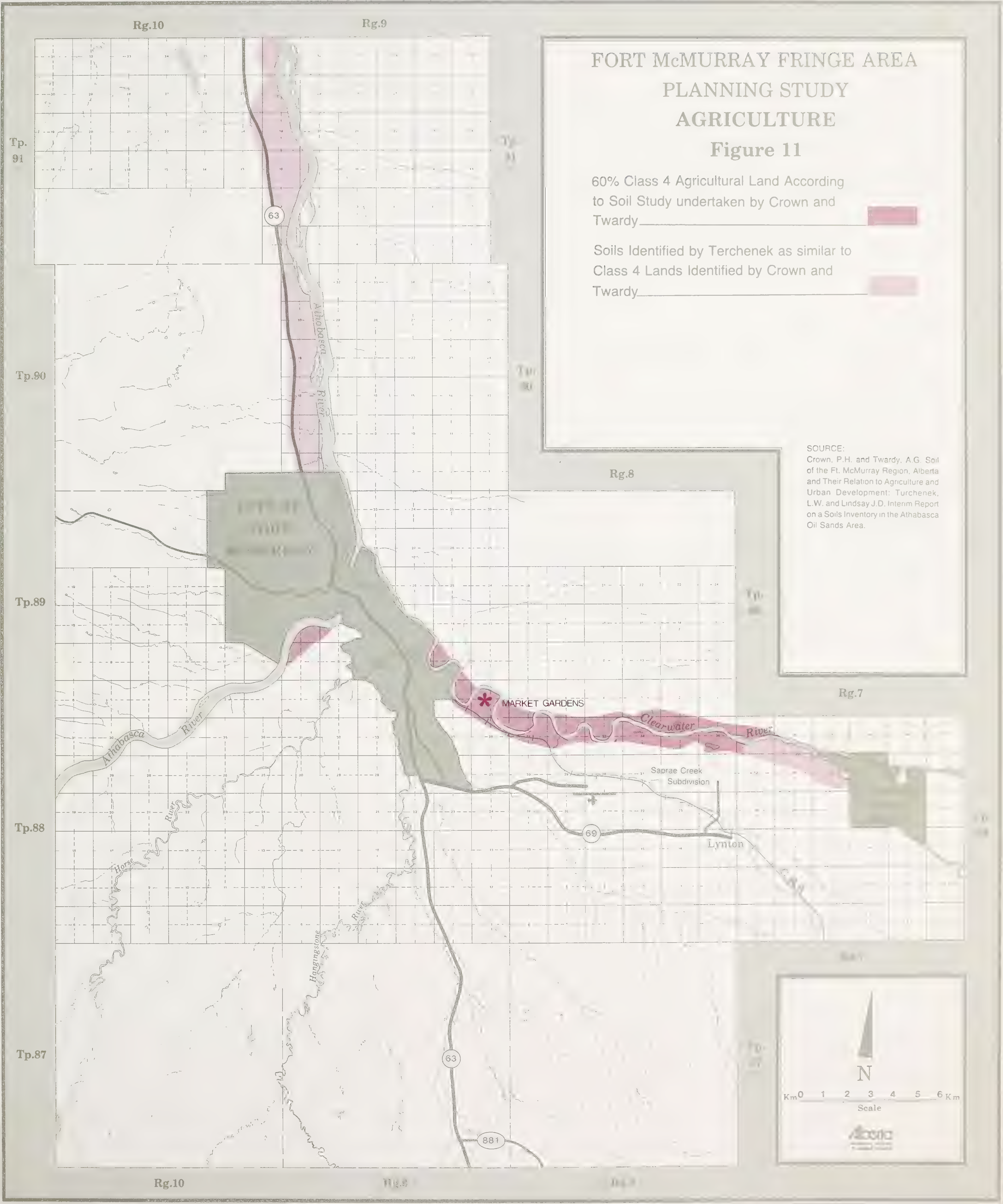
Recommendations

1. The Improvement District should encourage agriculture and low intensity agricultural uses to establish in those areas which would not be susceptible to major flood damage.
2. Intensive agriculture pursuits such as greenhouses or tree farms are appropriate urban fringe uses which the Improvement District should consider. However, the Improvement District should restrict associated residential development in order to minimize municipal servicing costs.

FORT McMURRAY FRINGE AREA PLANNING STUDY

AGRICULTURE

Figure 11



60% Class 4 Agricultural Land According to Soil Study undertaken by Crown and Twardy ▨

Soils Identified by Terchenek as similar to Class 4 Lands Identified by Crown and Twardy ▨

SOURCE:
Crown, P.H. and Twardy, A.G. Soil of the Ft. McMurray Region, Alberta and Their Relation to Agriculture and Urban Development: Turchenek, L.W. and Lindsay J.D. Interim Report on a Soils Inventory in the Athabasca Oil Sands Area.

3.6 SAND AND GRAVEL RESOURCES

Background Information

Gravel and sand deposits within the study area were identified in a reconnaisance level study of the Athabasca Oil Sands region in 1980 by J.C. Fox. This study used aerial photos and some existing geological information to identify sources of gravel and sand which could be used as a basis for future testing.

Figure 12 shows those areas identified as having potential sand or gravel deposits. They are largely glacio-fluvial outwash deposits, including meltwater channel sediments and modern river deposits.

Better sand and gravel areas are located generally in three areas:

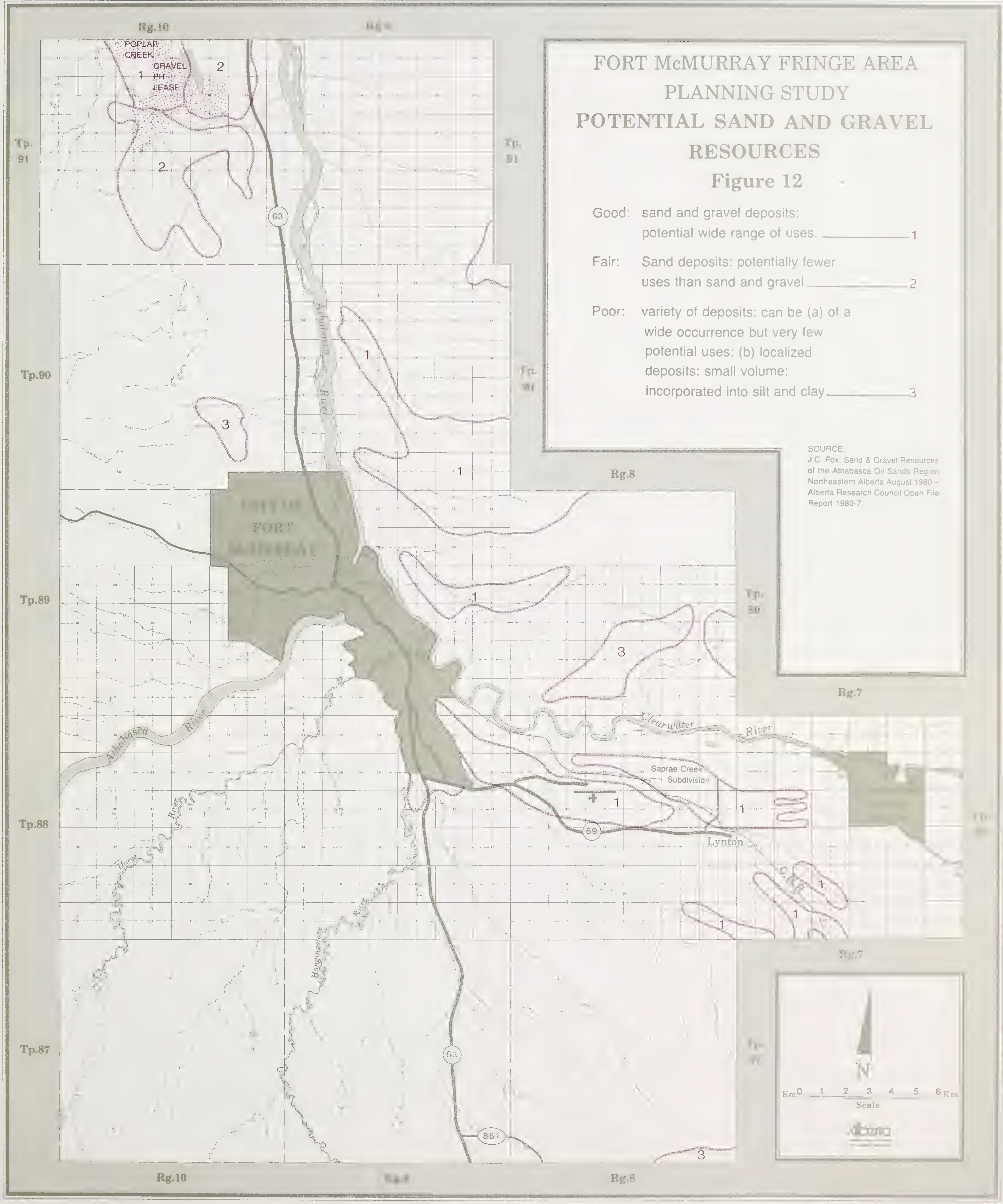
1. Keyano College/Airport/Saprae Creek Area: This area is a series of meltwater channel deposits ranging from fine sand to gravel, but predominantly sand to gravelly sand. Gravel ranges to 73% in some areas. An existing gravel pit operates in this vicinity north of Keyano College.
2. Poplar Creek Area: This area is mostly sand, with gravel and sand found as bars and outwash. Thickness varies from one to three or more metres. Alberta Energy and Natural Resources Regulates the extraction of sand and gravel from this area.
3. Athabasca River East: There are thin outwash deposit of sand and gravel along the bottom of meltwater channels as terraces. Some areas identified here may be void of sand and gravel.

Implications

Sand and gravel are critical inputs to the construction industry for the construction of buildings and roads, and therefore should be identified, extracted and used in a manner which makes the most efficient use of the resource while minimizing environmental impacts.

Recommendations

1. The Improvement District should encourage the extraction of useable deposits of sand and gravel prior to permitting developments which would preclude their extraction.
2. The Improvement District should support the actions of Alberta Energy and Natural Resources to regulate sand and gravel extraction at Poplar Creek, to ensure the availability of sand and gravel to users on an equitable basis.
3. In accordance with the Land Surface Conservation and Reclamation Act, the Improvement District should require the reclamation of all sand and gravel extraction sites.



FORT McMURRAY FRINGE AREA PLANNING STUDY

POTENTIAL SAND AND GRAVEL RESOURCES

Figure 12

Good:	sand and gravel deposits: potential wide range of uses.	1
Fair:	Sand deposits: potentially fewer uses than sand and gravel	2
Poor:	variety of deposits: can be (a) of a wide occurrence but very few potential uses: (b) localized deposits: small volume: incorporated into silt and clay	3

SOURCE:
J.C. Fox, Sand & Gravel Resources of the Athabasca Oil Sands Region Northeastern Alberta August 1980 – Alberta Research Council Open File Report 1980-7.

4. ENVIRONMENTAL CONSTRAINTS

4. ENVIRONMENTAL CONSTRAINTS

Existing land use and development both constrains and provides opportunities for future development. In addition to existing land uses, physical suitability of the land to support development is critically important. For the purposes of this Study, physical environmental constraints are identified in order to identify areas which would have severe limitations to forms of development requiring buildings or structures. It should be noted that these areas may still be suitable for less intense uses such as resource extraction, recreation and agriculture.

This section is divided into three areas: Soil Limitations, Topography and Flooding.

4.1 SOIL LIMITATIONS

Soil information is used, for the purposes of this project, as an indicator of potential site developability, as the information is available at a suitable level of detail, and is generally a good indicator of drainage, soil texture, permeability, chemical properties, stoniness and slope. The information used here is taken from the Fort McMurray Subregional Background Report, which used the following sources:

i) Tuchenek, L.W. and Lindsay, J.D., Interim Report on a Soils Inventory of the ‘‘Athabasca Oil Sands Area’’, A.O.S.E.R.P. Report 28, 1978.

ii) Crown, P.H. and Twardy, A.G. ‘‘Soils of the Fort McMurray Region (Townships 88-89, Ranges 8-11) and their relation to Agricultural and Urban Development’’. Contribution M-70-2, Alberta Institute of Pedology, University of Alberta, 1970, Edited 1975.

Both of these soils studies divided the study area into Great Soil Groups according to the Canadian System of Soil Classification. The orders identified are: Luvisolic; Brunisolic; Gleysolic; Regosolic; and Organic. The Crown and Twardy Study also identifies sub-groups within these Orders.

All Organic, Regosolic and Gleysolic Order soils were defined as having severe limitations for building and road construction. This was modified slightly in those areas where Peaty Gleysols dominate, but significant soils of the Brunisolic or Luvisolic Orders were identified. In these cases, soils were considered potentially developable, pending further, more detailed investigation.

Figure 13 illustrates those areas which according to the soils information are potentially developable. It is cautioned that this information is not intended to be site specific and should not substitute for on site inspection and soil testing. Precise definition of boundaries for development purposes based upon soils will require considerably more detailed investigation.

The soils data revealed that potentially developable areas are generally interspersed with patches of poorly drained lands. The number of large areas of potentially developable lands are limited. The more significant areas which appear to have development capability include land located:

1. Southwest of Fort McMurray between the Horse and Hangingstone Rivers.
2. Northeast of Fort McMurray across the Clearwater and Athabasca Rivers
3. West of Fort McMurray along the thickwood Forestry Road.

4.2 TOPOGRAPHY

The study area has a number of major river valleys which are a significant development constraint (see figure 13). The valley slopes vary in steepness from 10% to greater than 20% in some areas.

The slope areas are generally a mixture of colluviem, mixed bedrock and glacial materials. Numerous slumps are visible along the Athabasca, Christina and Clearwater Valleys. This provides a major development constraint for structures, as well as restricts road construction.

The areas outside the river valleys are generally level to gently rolling. This causes drainage problems in some areas, particularly where soils are clayey and impervious, and percolation is impeded.

4.3 FLOODING

In addition to the limitations to development resulting from the river valley slopes, the flood potential of the rivers must be taken into consideration.

Flooding in the Fort McMurray area is principally caused by the formation of ice jams on the Athabasca River during spring breakup.The ice jam conditions result when the Athabasca River break-up occurs in the south. Ice which is flowing north down the Athabasca enters the broader river channel at Fort McMurray. The flow rate slows and ice sticks to the river bed causing a jam to form. Water then backs up the Clearwater River valley into low lying areas.

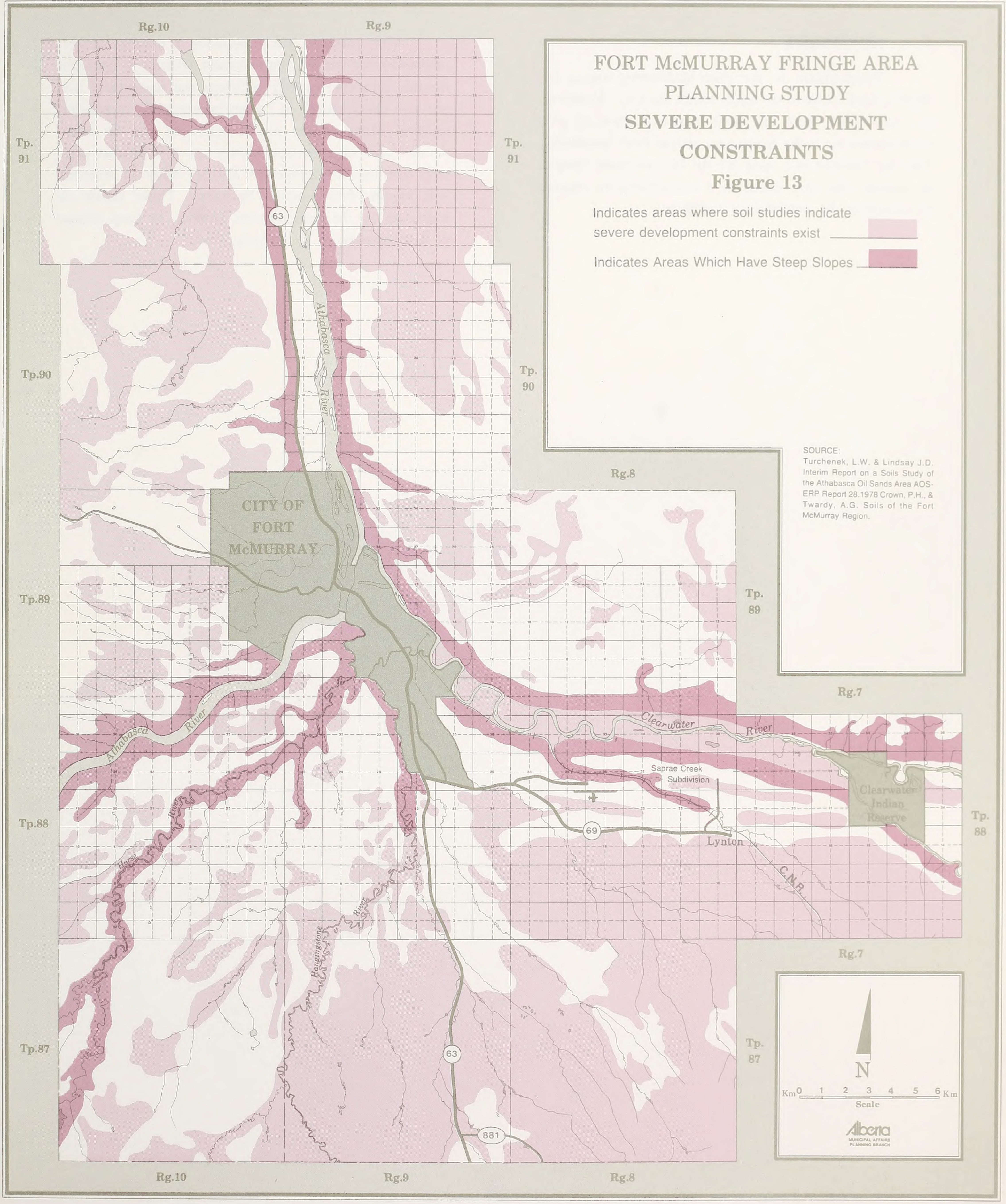
Ice jam flooding is the most significant flood threat. By comparison, open water flooding constitutes a negligable threat to the flood plain.

Implications

Development in the study area is severely constrained in many areas due to unsuitable soil conditions, unstable slopes and potential flooding. Those areas which are potentially developable are often interspersed with patches of poorly drained land. Development which does occur should be in an efficient, economical and environmentally responsible manner, in order to maximize the use of the land available.

Recommendations

1. The Improvement District should require that adequate site information be provided with development applications to provide for adequate assessment of the proposal. This may include geotechnical reports or other site information to ensure that soils are suitable and slope stability is adequate for the proposed use.
2. The Improvement District should establish a policy of ensuring that developments do not:
   (a) promote erosion or endanger the stability of any part of a river or valley side;
   (b) cause stream sedimentation or other form of deterioration of water quality.
3. The Improvement District should consider requesting Alberta Environment to identify floodplain areas within the study area. The I.D. should restrict development within the floodplain to those areas which will not incur major damage in the event of a flood. Examples include agricultural and low intensity recreational uses.



FORT McMURRAY FRINGE AREA PLANNING STUDY

SEVERE DEVELOPMENT CONSTRAINTS

Figure 13

Indicates areas where soil studies indicate severe development constraints exist ▨

Indicates Areas Which Have Steep Slopes ▨

SOURCE:
Turchenek, L.W. & Lindsay J.D. Interim Report on a Soils Study of the Athabasca Oil Sands Area AOS-ERP Report 28.1978 Crown, P.H., & Twardy, A.G. Soils of the Fort McMurray Region.

5. SUMMARY

Development in the Fort McMurray region has largely been focussed on lands within the City. However, in recent years there has been increased attention paid to developments in the fringe area around Fort McMurray. This has resulted in a need for the Improvement District to address land use issues in a comprehensive manner to maximize the potential of the area.

This planning study includes a number of recommendations for the Improvement District to consider, towards achieving orderly, efficient and economical land use and development in an environmentally responsible manner. Many of the recommendations can be incorporated now into the development review process presently used by the Improvement District. Some, if accepted, will require future action be taken. These should be addressed by the Improvement District, to keep abreast of development on an ongoing basis.

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